Research article

Agency in action: Towards a transactional approach for analyzing agency in sustainability transitions

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ABSTRACT

This article formulates a conceptual and analytical contribution to investigations of agency in transitions. Transition studies often assume, rather than assess, structure-agency dynamics through conceptions of a 'nested hierarchy' between, or a 'structuration continuum' within, niches and regimes. Neo-institutionalist and practice theoretical approaches have provided tools for more precise investigations of this interplay, like institutional logics, institutional work, and the de-and re-routinization of habits. Yet, both also struggle to adequately reveal how structures enable or constrain action and how actors build structures. We introduce transactional pragmatism, with its focus on how actors and their context are in constant functional coordination, to further develop the concept of habits as a central mechanism through which the process of de-and re-routinization takes shape in action. We draw on Practical Epistemology Analysis and the concept of *privileging* to suggest analytical concepts and questions for facilitating future research on the topic.

1. Introduction

The question as to how we should understand agency in the context of sustainability transitions (STs) has become increasingly important in transition studies. Two interrelated conceptual and analytical issues contribute to this *agency gap*. On the one hand, the field's conceptualization of socio-technical continuity and change has been heavily influenced by the multi-level perspective (MLP), in which transitions are understood as emerging from the interaction between three analytical levels: niches, regimes, and landscapes. This conceptualization has however been criticized for being too structuralist (cf. Smith et al., 2005; Fuenfschilling and Truffer 2014; Upham et al., 2018) and for only successfully explaining social order and reproduction, "while processes of social change remain black boxed" (Pesch 2015: 381). On the other hand, we are still in need of an adequate understanding of how actors *act* in transitions (cf. Pesch 2015; Becker et al., 2021) and of how stasis and change are actually *made*. Existing studies have been criticized for being "fuzzy and sometimes rather arbitrary" in their attempt to grasp niche-regime-landscape dynamics and for "assuming, rather than empirically assessing" (Fuenfschilling and Truffer 2014: 773) agency. Gaining insight in how actors' actions affect reproductive or transformative outcomes requires going beyond macro- and meso-level approaches, and paying proper attention to the micro-dynamics of continuity and change in concrete, observable practices. This is a particularly challenging endeavor which touches upon a multitude of entangled issues, such as individual motivations, collective decision-making and learning dynamics, affect, individual and social identity, meaning and social conventions (Upham et al., 2018).

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Our limited insight in processes of social change and how these are enabled by concrete actions is particularly "awkward for a branch of research that is especially interested in developing insights about how to facilitate large-scale societal transformations" (Pesch 2015: 379). In recent years, more and more scholars have explicitly targeted this agency gap through novel conceptual work. In doing so, they build on notions of Giddens' structuration theory (Giddens 1984), which determines the agency of actors as *"both constrained and enabled by institutional structures, which, in return, are socially constructed by them"* (Fuenfschilling and Truffer 2014: 776). In other words, agency is deemed *'embedded'* in overarching institutional and organizational structures (Garud et al., 2007). Whereas individuals are to a considerable extent bound by the overarching social context in which they live their lives, the structures that make up this context are also reliant on them for their continuation and reproduction.

However, critiques have been raised in the past that structuration theory suffers from 'central conflationism' (cf. Archer 1995): actors are either represented as reproducing existing structures or as independently and freely creating such structures, without being to a certain extent confined by them. This gray area in terms of the analytical distinctions and interplay between structure and agency can also be identified in transition studies. Although structuration is a foundational element of the MLP, the criticism has been raised that it is not always operationalized or spelled out in detail (e.g. Huttunen et al., 2021) and that assumptions regarding "a low or high structuration for niches and regimes" (Fuenfschilling and Truffer 2014: 773) lack empirical underpinning. Endorsing critical sustainability transition researchers' claim that it is vital to gain more precise and empirically grounded knowledge about how societal transformations are *made* through concrete actions, this article introduces an approach for investigating agency *in action*.

In the next section, we first present the reader with our reading of the discussion on agency in transitions, starting from the incorporation of – and issues with – agency within the MLP. Subsequently, we explore two promising conceptual contributions within the transitions literature that propose ways to overcome the agency gap: neoinstitutionalist approaches based on conceptions of institutional *logics* or institutional *work* (e.g. Fuenfschilling and Truffer 2014) and practice-theoretical approaches that center routinized practices or habits (e.g. Hoffman and Loeber 2016; Welch and Yates 2018). Notwithstanding the merits of these conceptualizations, we argue that both still miss important pieces of the puzzle. Neo-institutionalism puts forward a form of agency (i.e. institutional *work*) built around cognitive, strategic, intentional and teleological action. Scholars starting from this perspective tend to approach values, norms and interests as static 'resources' for exercising agency, which insufficiently takes into account how these also change over time, through the actions performed. Relatedly, more could be done to further conceptualize, analyze, and empirically reveal whether and how actions undertaken generate change. In other words, a more detailed account is needed of the institutional work done and how this relates to the stability or change of context (i.e. the configuration of institutional *logics*). Social practice theory provides us with a conception of agency that revolves around routinized or habitual forms of behavior that become performed and shared by people. These social practices provide structure to actors' behavior, but can be altered by them "according to their personal experience and habits" (Città et al., 2019: 2). Although conceptions of agency in this tradition do not shy away from the complex interplay of cognitive, emotional, and material elements that make up habits and practices, social practice theory still struggles to formulate a theory of change (cf. Hoffman & Loeber, 2016; Rauschmeyer et al. 2015) that allows us to properly understand how the process of (re)constructing habits unfolds and how individual habits are embedded within larger social practices (Köhler et al., 2019; Welch and Yates 2018). In particular, it does not provide us with the required conceptual and analytical tools to investigate agency in action and to overcome the 'paradox' of embedded agency, i.e. the problem of understanding how agents can bring about structural changes if their interests and cognitive schemes have been created by these same structures (Weik 2012).

Hence, our central argument is that, in order to properly understand agency, continuity, and change in the context of transitions, further conceptual and analytical work is needed. First, what is still lacking in neoinstitutionalism and social practice theory – and what critics like Archer (1995) and Shilling (2008) perceive as an inherent weakness in structurationist approaches – are fruitful analytical distinctions between agency and structure. Without such distinctions, we may be able to overcome the dichotomy of structure and agency but fail to adequately investigate their interplay and empirically reveal how, exactly, structures enable or constrain action and how actors build structures (Weik 2012). Second, we need to move away from "rational action models" which imply actors drawing from a portfolio of "stable preferences, resources and constraints at least in the moment the actor takes the decision to act in a certain manner" (Welch n.d.; Weik 2012: 568). In the second part of this article, we explore how *transactional pragmatism* offers a way of addressing these concerns conceptually and analytically. Conceptually, transactional pragmatism introduces an understanding of structure-agency interplay in which actors and their environments change simultaneously and reciprocally, i.e. in *transaction*, thus further specifying the analytical distinctions and interplay between people's actions and the context in which these occur, and moving away from stable motives as grounds for action. Transactionalism conceives habits as being at the center of the functional coordination between actors and their environment. The process of reconsidering habits is thus fueled by a constant back-and-forth between our default modes of engaging with our environment (be it intellectually, practically, and/or emotionally) and the (new) situations we encounter. The final part of the article connects these conceptual insights to analytical tools for the empirical investigation of agency in concrete transition initiatives, by drawing from Practical Epistemology Analysis (PEA). We end the article by discussing the limitations of our conceptual and analytical approach, and suggest pathways for further research into these matters.

2. Agency in sustainability transitions: a brief overview

2.1. Agency, structuration and the multi-level perspective

The agency debate within transition studies is firmly rooted in Giddens' structuration theory. Structuration implies that 'structure' (in the form of institutions, customs, and meaning) is "both the medium and the outcome of social practices", thus assuming a mutually

constitutive role with agency (Garud et al., 2007: 961). Within the MLP, structuration is fundamentally reflected in the 'nested hierarchy' between landscapes, regimes, and niches. Niches are to a large extent bound by the power of regimes, while both niches and regimes are bound by overarching macro-trends of the landscape. Yet, even while being embedded in the institutionalized mainstream, niche actors can still generate change by exploiting internal regime contradictions, or by making use of policy windows that result from landscape pressures (Smith et al., 2010). Over the years, transition researchers have come up with numerous patterns of change in this regard. Geels (2005) for instance distinguishes between practice-based and actor-based transition pathways. *Practice-based pathways* provide us with valuable insight into how social and technological practices might interact and generate windows of opportunities for regime change. *Fit-stretch* transition pathways initially start with new technological (or social) practices that are interpreted or used in ways that *fit* the existing regime. Over time, new ideas emerge on the functionality of such practices, which can cause a *stretch* or alteration of the existing regime. *Accumulation* and *hybridization* patterns refers to new practices interacting with existing ones in order to generate regime change, either through old practices serving as 'catalysts' for change (accumulation) or by old and new practices forming a sort of 'symbiosis' that in the end leads to socio-technical change (*ibid.*).

Geels goes on to state that these interactions between practices are always shaped by actors, and that the MLP "needs to be filled in with more detailed actor-related patterns" (ibid.: 692). However, Geels recognizes that the MLP provides an 'outside-in' approach to the study of transitions: while it serves as a useful heuristic for mapping long-term processes of socio-technical change, it is less capable of pinpointing how concrete sustainability actions take shape and contribute to STs. It projects a concept of agency that is based on predefined collectives of actors (e.g. niche or incumbent actors) with preconceived ideas of how they act in transitions. Fuenfschilling & Truffer (2014: 773), for instance, perceive the conceptualization of regimes as too 'monolithic' and 'homogenous', while the empirical application of the model is criticized for being "fuzzy and sometimes rather arbitrary". Several authors have attempted to formulate more dynamic accounts of niche-regime interactions (e.g. Smith, 2007). Others have introduced the notion of *hybrid* actors in transitions, who do not conform to the behavioral script of either the niche- or regime level (e.g. Diaz et al., 2013; Sutherland et al., 2015). Regime actors might be sympathetic (or even instrumental) to niche evolutions, while niche actors might be more status-quo oriented then one might expect from their niche position. Diaz et al. (2013) argue in this regard that "a less hierarchical representation [compared to the MLP] might be helpful" when trying to grasp agency in transitions (p. 72). Hence, such criticisms suggest that the locus and forces of continuity and change do not neatly follow the categorizations and hierarchies as described in the MLP.

In later work on the MLP, the conceptualization of structuration as a 'nested hierarchy' has evolved into an idea of a *continuum* of structuration, in which the different levels of the MLP represent different intensities of structuration, "which are not necessarily hierarchical" (Geels 2011: 37). In other words, regime actors are perceived to be more confined by structures compared to their niche counterparts, as niches have less stable sets of rules with less ability to form constraints. However, also in such conceptualizations, structure-agency interplay is assumed rather than assessed. To quote Geels (2005: 695) once more, we thus need to look at STs "from the inside out" to get a better grasp on how agency and action take shape and have an impact. Pesch (2015: 379) formulates three important questions in this regard: "(i) what is or can be the contribution of actors to transitions, (ii) how can this role be theoretically captured, and (iii) how can agents influence or contribute to a transition process"? Becker et al. (2021: 1) add to this the important question of "why actors act as they do, in response to internal and contextual factors?" Both authors thus point to the need for formulating an action-based theory of change. To the field's credit, more intricate and dynamic conceptions of agency and change in transitions have started to emerge in recent years. In the following paragraphs, we will discuss two particularly interesting contributions in this regard, coming from neoinstitutionalism and social practice theory.

2.2. The neoinstitutionalist approach to agency

Neo-institutionalist approaches to transitions conceptualize actors' agency to be embedded within institutional *logics*, which can be defined as "the socially constructed, historical pattern of material practices, assumptions, values, beliefs, and rules by which individuals produce and reproduce their material subsistence, organize time and space, and provide meaning to their social reality" (Thornton & Ocasio, 1999: 804). Institutional logics provide actors with a set of formal and informal rules for action and interpretation, both guiding and constraining their agency (*ibid.*). Although socially constructed – and thus dynamic and contingent – these logics also function as sources of stability, reproduction and predictability within society. In the context of STs, Fuenfschilling and Truffer (2014: 775) for example argue that the strength and stability of a socio-technical regime can be identified by assessing the institutionalization of its core logics, and distinguish between three phases in this regard: first of all, *habitualization* represents a social innovation (e.g. a new form of behavior or a technological development) that is created and adopted by a small number of actors as a response to a recurring problem. These social innovations become habitual in the sense that they are evoked "with minimal decision-making efforts by actors" (Tolbert and Zucker 1996). Yet, such habits are still considered unstable and impermanent, as they lack coordination and are not associated with any values or meaning (Fuenfschilling and Truffer 2014).

Second, *objectification* indicates that a social consensus emerges around the innovation and that it gets increasingly adopted by organizations. The newly formed habit thus gets embedded within a collective rationality (ibid.). Take for example individual efforts to repair smartphones that – over time – got embedded within the rationality of a 'right to repair'. This not only sparked a movement demanding repairable electronic devices, but also found entrance within European institutions as part of the European transition towards a circular economy (European Commission 2023). Finally, *sedimentation* indicates that the social innovation becomes structurally embedded, normative, and taken for granted by most actors. Some actors will develop vested interests in the innovation, maintain its stability and manage resistance against it (ibid.). When successful, institutional logics thus are stable, hard to deinstitutionalize, and project meaning and practices upon actors.

Although this constrains actors in their actions, neoinstitutionalist approaches do allow for change to emerge through actors'

reinterpretation of logics and strategic maneuvering (Fuenfschilling and Truffer 2014; Geels 2020). Indeed, actors are attributed institutional entrepreneurship or the capacity for so-called *institutional work*, which is defined by Fuenfschilling & Truffer (2014: 776) as "the purposive action of individuals and organizations aimed at creating, maintaining and disrupting institutions". Hampel et al. (2017: 27) further distinguish between three subtypes of institutional work: *symbolic work* uses symbols such as sign, identity and language to influence institutional logics, *material work* draws on physical elements of the environment, like objects and places, while *relational work* is concerned with "building interactions to advance institutional ends" (*ibid.*).[1]

In terms of the employment of neoinstitutionalism for investigating transitions, Fuenfschilling and Truffer's inquiry into the institutional logics that make up the Australian urban water regime is heavily reliant on tracing so-called *discursive hotspots* to "identify issues that have not yet been settled and thus indicate where change is currently in the making and a transition may be occurring" (*ibid.*: 781). They identify several dominant and emerging logics in the regime, thereby laying bare its heterogeneity and semi-coherence. Becker et al. (2021) alternatively focus on the institutional work by niche actors to achieve infrastructural change for facilitating cycling in Berlin. They mostly focus on a combination of so-called *symbolic* and *strategic* institutional work in the form of identity and network-building, and link this to socio-technical change. They find that activists in this context built pressure for socio-technical change not by forming a movement with strong organizational ties, but by focusing strongly on the construction of a shared identity, sometimes even with populist techniques like utilizing an 'us vs. them' rhetoric. Hence, identity building becomes a form of strategic institutional work, and helps questioning dominant logics that make up the incumbent regime (*ibid.*).

Neo-institutionalist work deserves praise for adding further substance to the notion of structuration and embedded agency in transitions. On the one hand, the concept of logics indicates that actors are bound by a complex entanglement of both informal norms (e.g. taboos, traditions, customs and codes of conduct) and formal conditions (e.g. laws, formal rights) (North 1990:97). On the other hand, the conceptualization of different forms of institutional work indicates that – within such structures – actors employ different forms of agency to bring about change. Hence, actors are – to borrow a phrase from Lawrence and Suddaby (2006:219) – not 'cultural dopes': they are "able to work within institutionally-defined logics of effect or appropriateness" and showcase the creativity that is needed "to adapt to conditions that are both demanding and dynamic" (*ibid.*: 219). However, we would argue that the *paradox* of embedded agency persists within this conceptualization: it does not provide a proper analytical distinction between agency and structure that allows us to make sense of how actors engage in institutional work while at the same time being confined by the institutional logics that make up their context. This creates the risk of perceiving agency as preeminently rational and teleological: actors engage in *strategic* behavior with a clear and pre-established aim of altering parts of the institutional logics in which they are embedded. Welch (n.d.) in this regard speaks of a *portfolio model* of human agency, in which individuals decide upon their course of action by selecting from a relatively stable portfolio of values, attitudes, norms and interests. As a result, it is no longer clear how such values, attitudes, norms and interests are influenced by the institutional logics in which actors are situated, and how they decide upon a course of action given such influences. The neoinstitutionalist approach to agency thus does not provide us with the necessary analytical tools to investigate the *interplay* between agency and structure.

2.3. Agency in social practice theory

Within social practice theory, the embedded nature of agency becomes apparent through the central role of routines or habits. Reckwitz (2002: 249) defines such habits as "a routinized way in which bodies are moved, objects are handled, subjects are treated, things are described and the world is understood". Through the concept of habits, the situatedness of one's actions becomes apparent through one's routinized actions, understandings, aims and interpretations (*ibid.*). Moreover, in line with the three stages of institutionalization as outlined above, such routinized ways of engaging with the world are not confined to the individual but become socially shared, forming a "collective pattern of activity" (Warde 2005: 134).

Interestingly, the notion of habits provides the starting point for a practice-theoretical conception of reproduction and change. Within social practice theory, actors are always seen as *performing* (Reckwitz 2002; Schatzki 2002) or *orchestrating* (Bourdieu 1972) social practices through their individual habits (see also Città et al., 2019). Hence, actors have the ability to "not only play (act and modify) individual and collective practices in a given situation but also, if necessary, to create new ones" (*ibid.*: 3). The roots of changes in social practices are placed within a 'crisis' of habits, in which actors are forced to reconsider their routinized ways of interacting with the world. In the words of Reckwitz (*ibid.*: 255), "*the 'breaking' and 'shifting' of structures must take place in everyday crises of routines, in constellations of interpretative indeterminacy and of the inadequacy of knowledge with which the agent, carrying out a practice, is confronted in the face of a 'situation'*". A prime example of this within transition studies is the work by Hoffman & Loeber (2016) on greenhouse innovation in the Netherlands. They give a detailed empirical account of how niche practices – instead of evolving from a portfolio of *a priori* formed values, norms, and normative visions of the future – get established inductively due to feelings of discontent or unease with regime practices. They go on to argue that "*The discontent or unease that caused the object of knowledge to cease to be part of routine subsequently triggered creativity in articulating and consolidating what was 'new', and in giving these new ideas concrete shape*" (ibid.: 15). Such processes of change through 'crises' of habits have also been described by other research: Jalas & Rinkinen (2016) describe instances of people reconsidering their habits in terms of domestic heating and the need for change in this regard when confronted with small-scale crises like frozen water pipes, or large-scale events like power blackouts.

Social practice theory is without a doubt a major improvement in our understanding of the entanglements that makes up one's

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[1] For an exhaustive overview of types of institutional work related to the creation, maintenance and disruption of institution, consult Lawrence & Suddaby (2006).

agency-in-context, and we will also adhere to the centrality of routines or habits in our understanding of agency in transitions (cf. infra). However, we would argue once more that it still lacks clear and comprehensive conceptual and analytical tools for investigating agency in action for three reasons. First, a recurring concern in the literature is that the centrality of practices risks sidelining the actor itself in the process. By focusing on the - often complex – web of interrelated practices in both time and space, social practice theory bears the risk of disconnecting itself from the actors that produce them (Sovacool and Hess 2017). Second, although acknowledging the complex entanglement of elements that make up the formation and re-arrangement of practices, there is still no real clarity on how this process of *de- and re-routinization* unfolds exactly and what elements to consider in this regard (cf. Keller et al., 2022). In other words, more work is needed to determine how habits and (social) practices interrelate, and how actors can alter such practices through creatively reconsidering their habits (Città et al., 2019). Also here, we hence still lack proper analytical distinctions between structure and agency that allow us to make sense of their interplay. Recent conceptual developments like contemplating habits as embedded in so-called *teleoaffective regimes* – a concept which has also been introduced in the transitions literature by Welch & Yates (2018) – arguably remain underdeveloped and add little clarity to this process. The term suggests that individual habits are structured around collectively shared "arrays of ends, orientations and affective engagements" (ibid.: 293). Yet, there is no clarity nor empirical accounts of how the interplay between such regimes and habits functions in reality. Third, at least part of the literature on social practice theory in the context of STs has displayed an empirical focus on individual habits in the context of consumption and lifestyle (e.g. Gram--Hanssen 2010), which risks detaching social practice theory and the process of reproducing and re-considering habits from more collective practices (cf. Welch and Yates 2018; Köhler et al., 2019).

In sum, our exploration of agency in transitions shows that the field has come a long way. Originating in early criticisms of the MLP as being "too descriptive and structural" (Smith et al., 2005: 1492), the question as to how actors act within transitions and how we can get a better grasp on the embedded nature of agency has triggered a growing body of work. Yet, the literature still struggles to provide us with conceptual and analytical tools to understand and investigate the interplay between agency and structure and the manifestation of agency *in action*. In the following section, we will explore what transactional pragmatism has to offer to further sharpen our lens in this regard.

3. Transactionalism and agency-in-action

Pragmatism, and in particular the transactional theory introduced by Dewey and Bentley (1949), provides us with conceptual and analytical tools that have great potential to overcome some of the above described, remaining shortcomings regarding understanding agency in STs. In this section, we elaborate on how transactional pragmatism can equip us with much-needed frameworks to investigate agency in action. First of all, it offers more precise analytical distinctions between agency and structure that allow to empirically investigate their interplay. Second, transactional pragmatism focuses on how actors and their environments change simultaneously and reciprocally (i.e. in transaction) which allows us to grasp the dynamics of how agents and structures continuously influence each other. Third, it has inspired the development of analytical tools that can be employed for empirically assessing how agency is exercised without the need to rely on a priori assumptions regarding the degree of structuration of different actors or settings in the context of STs. As such, it can enable empirical researchers to start opening up the black box of processes of societal change (Pesch 2015) with a focus on how change is made in action. In what follows, we first explain the concept of transaction and how it provides us with fruitful analytical distinctions and a dynamic approach to the interplay of structures and agency. Next, we further develop habits as a central concept within this interplay – as also highlighted in social practice theory (cf. supra) – in a transactional sense. Finally, we discuss how transactional analytical frameworks can progress our capacity to empirically *assess*, rather than a priori *assume* (Fuenfschilling and Truffer 2014: 773) what/who contributes to the reproduction of prevailing structures or, otherwise, to their change through exercising agency.

3.1. Introducing transactions

In Dewey and Bentley's (1949) theory of transaction, actors and their physical and social surroundings or structures are seen as mutually interdependent: they transform continuously and reciprocally, *in transaction*. Human actions change the environment while shifts of human activity happen in response to changing surrounding conditions. This focus on actor-environment transactions has profound consequences for understanding and approaching action. Living beings *always already* act, while stimuli from the environment *redirect* this action. Instead of understanding action in a causal, linear, and mechanistic way, transactionalism approaches it as a circle of ongoing, functional coordination of co-existing actors and environments (ibid.). Dewey and Bentley's transactional philosophy thus "sees together" what is often "seen apart": mind and matter, subject and object, self and world (Ryan 2011).

Dewey and Bentley (1949) distinguish their transactional approach from two other ways of understanding action: self-action and inter-action (Garrison et al., 2022). In self-action, things are seen as acting under their own powers (Ibid.: 2). Presumptively independent actors, minds, selves, forces, etc. are viewed as having intrinsic powers and essences. When locating such assumed self-active powers in elements of the surroundings, a self-actional perspective can easily lend itself to naive structural determinism in which it is

assumed that, for example, institutional norms or technological innovations *in themselves* generate certain effects. A focus on self-active, independent actors, on the other hand, can lend itself to naive actor voluntarism as if individuals could remain unaffected by, for example, institutional logics or social practices.[2] An inter-actional perspective, on the other hand, does take into account how actors and structures influence one another. It does so, however, by looking at a phenomenon or event as the mere sum of its constitutive parts that relate to each other through causal interconnections. This is for example the case if values attitudes, norms, interests, etc. are approached as stable entities, readily available to draw upon in encounters with others (the 'portfolio model', cf. supra), with problematic situations, in negotiations, etc. instead of seeing these as the evolving results of ongoing processes (Boenink and Kudina 2020). As such, an inter-actional perspective lends itself to an understanding of continuity and change processes in terms of linear causality, as it presupposes independent, separate things. The transactional view, as indicated, assumes a total situation and sees these parts as determined by the whole. Actors and environments are thus not understood as two independent things, but as one integrated system. This unity is formed by coexistent, co-dependent relations. An example of such a transactional perspective is Shilling's (2021 description of how cycling cultures are maintained within circumstances hostile to their maintenance. He describes how individuals creatively engage with challenging physical and environmental exchanges and thereby become cyclists in motorized societies. Whereas an interactional perspective assumes stable, separate parts that inter-act (e.g. technologies and infrastructure, a stable portfolio of preferences, values, attitudes, norms, and interests, etc.), a trans-actional perspective approaches actors and environments as continuously, reciprocally and simultaneously, transforming each other. An interactional approach thus takes insufficiently into account how, for example, cyclists' norms, attitudes, preferences, etc. continuously evolve in and through transactions with a hostile, motorized environment and how the latter is, vice versa, continuously influenced by cyclists acting upon it. It is therefore limited in its capacity to adequately capture the dynamics of stability and change that make up transitions.

For Dewey and Bentley (1949), the transactional unity of the actor and the environment is separable only for analytic purposes (Ryan 2011; Garrison et al., 2022). As argued, doing so is vital for adequately investigating the interplay between aspects of agency and structure and for empirically revealing how environmental conditions enable or constrain action and how actors (re)create environments. Transactional pragmatism thus not only recognizes that action is "undertaken by individuals always already within a social and natural context" but also views these actors as "possessed of emergent capacities and needs that distinguished them from, and also enabled them to shape actively, their wider milieu" (Shilling 2008: 4). To investigate agency in action, it is thus important to identify the intrapersonal aspects as well as the specific (i.e. interpersonal, institutional and/or physical) environmental aspects at play (see Fig. 1) in order to be able to determine those encounters that affect the transaction and how they do so. This is not only vital for grasping the dynamic entanglement of individual and collective change, but also for gaining more detailed insight into STs as changes of *socio-technical* systems. The latter, after all, requires analytical distinctions and a detailed focus on the unfolding of processes in order to understand the complex entanglement of technology development and social relations (see also Correljé et al., 2022) through, for example, the specific interplay of interpersonal, institutional and physical aspects.

3.2. Habits and structure-agency interplay

Our exploration of transactional pragmatism reveals a notion of embedded agency that steers away from the ontological duality between actors and their environment. Instead of perceiving our environment as a mere *container* in which we exist and which stands separate from how we act in the world, transactionalism centralizes the reciprocal and simultaneous relation between ourselves and our environment in which we have experiences (Cutchin and Dickie 2012; Muhit 2013). In line with our exploration of social practice theory, pragmatist thinkers have put forward the concept of *habits* as a central conceptual tool for further specifying this relation. Dewey claimed that habits "dominate transactions" (Aldrich, 2008: 152), yet their role in this is complex. Authors rooted in the Deweyan tradition point to a 'double law' or 'paradox' of habits in this regard (e.g. Pedwell 2017). Although they can be considered vectors for reproduction, habits are also seen as the primary routes for creating lasting social change (Pedwell 2017).

Another similarity between social practice theory and transactional pragmatism is the conceptualization of the process of de- and re-routinization of habits as triggered by the occurrence of a problematic situation. Reckwitz in this regard already spoke of an *everyday crisis* of routines as the basis for change, while Hoffman & Loeber also pointed at feelings of discontent or unease that trigger actors to reconsider their routinized actions (cf. supra). However, we would argue that transactionalism brings further conceptual substance to the unfolding of this process. A Deweyan conception of agency perceives configurations of habits as the mechanism through which we engage in a continuous functional coordination with our environment (Cutchin and Dickie 2012; cf. supra). As we participate in the world, we assess the situations in which we find ourselves with the aim of being in balance with it. Every situation requires coordinating what we know, how we routinely act and feel with what we encounter. Some situations might not disturb us in our regular habits – we, for example, do not actively assess the situation every time we climb up a flight of stairs. But we do engage in a process of re-considering our habits when we find ourselves *disturbed* in a particular context – for example when we have to climb a set of stairs after breaking a leg (Cutchin and Dickie 2012).

This disturbance of our habits can trigger creative responses to restore the balance with our environment. As Shilling (2008) argues, pragmatism's processual approach to the phases of "habit, crisis and creativity" that mark human action shows the importance of

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[2] While such naive deterministic or voluntaristic approaches are not at all common in ST literature, traces of it can be recognized in empirical studies that interpret observed phenomena as the result of assumed structural factors like dominant discourses, or as the result of mere personal choices or decisions without an evidence base grounded in empirical observations of how, exactly, actors and structures mutually influence each other.
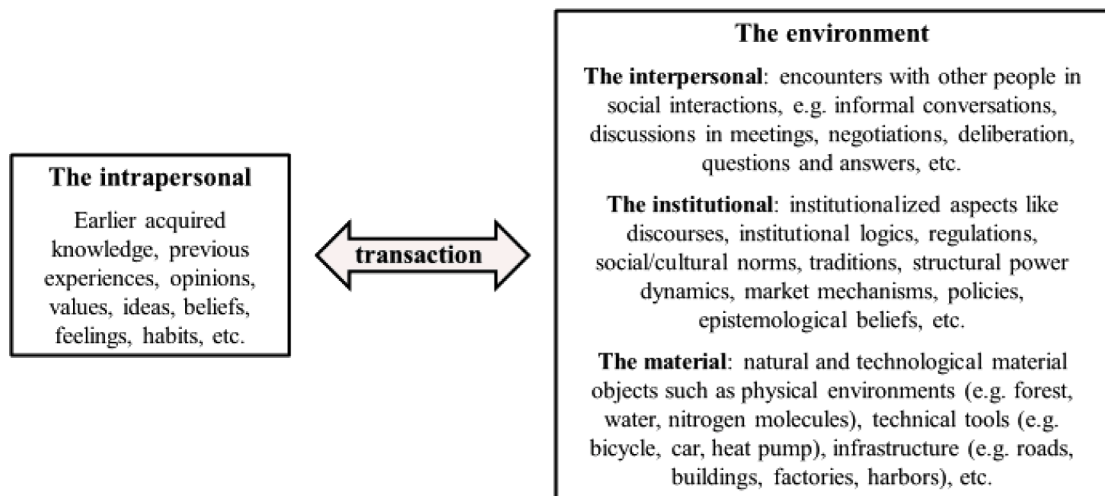
The intrapersonal

Earlier acquired knowledge, previous experiences, opinions, values, ideas, beliefs, feelings, habits, etc.

transaction

The environment

The interpersonal: encounters with other people in social interactions, e.g. informal conversations, discussions in meetings, negotiations, deliberation, questions and answers, etc.

The institutional: institutionalized aspects like discourses, institutional logics, regulations, social/cultural norms, traditions, structural power dynamics, market mechanisms, policies, epistemological beliefs, etc.

The material: natural and technological material objects such as physical environments (e.g. forest, water, nitrogen molecules), technical tools (e.g. bicycle, car, heat pump), infrastructure (e.g. roads, buildings, factories, harbors), etc.

Fig. 1. Actor-environment transactions.

investigating disturbances as crucial drivers for change. People might experiment with new types of action or might attempt at imagining how they could act differently, in order to determine their best course of action. These forms of imagination and creativity might give rise to new forms of meaning or new forms of practices (e.g. new forms of conduct or collective organization, novel technologies). From a Deweyan perspective, the process of re-considering habits should thus be seen as fundamentally transactional: we are always in relation to our social and material environment, and as we aspire to be in balance with it (by reconsidering our habits) we also change that environment (through new practices, new material objects, etc.). Consider, for example, someone who reconsiders their habit of cycling to work every day because that person had an accident and now feels unsafe. When that person changes habits and starts driving to work by car, the environment changes ever so slightly: in the end, more cars might end up on the road, potentially creating new dangerous situations for remaining cyclists, or possibly generating popular demand for more car-centered infrastructure to avoid traffic congestions.

In sum, a transactional view on habits gives further substance to the non-dualistic nature of structure-agency relations and provides us with an action-centered conception of habits and its relation with continuity and change. Our environments are reflected within our habits as we "acquire them through the conditions of social life" (Dewey cited in Aldrich, 2008, p. 152). Put differently, we develop habits through our experience of particular contexts and situations, which allows us to navigate them in a routinized fashion. Yet, when our routine forms of thought and conduct do not align with a particular situation or context, we engage in re-configuring our habits. When we do so, we also change our environment. Hence, change becomes continuous and a "permanent by-product" of actors' co-ordination with and evolving understanding of their environment (cf. Weik 2012, p. 574).

Following this exploration of habits in a transactional sense, it becomes important to develop a clear view of (i) what constitutes our habits and (ii) how they are indeed re-considered and changed in action. As we have argued, social practice theory does not provide us with such a clear view yet. Regarding the former question, the work of scholars inspired by transactional pragmatism allow to make
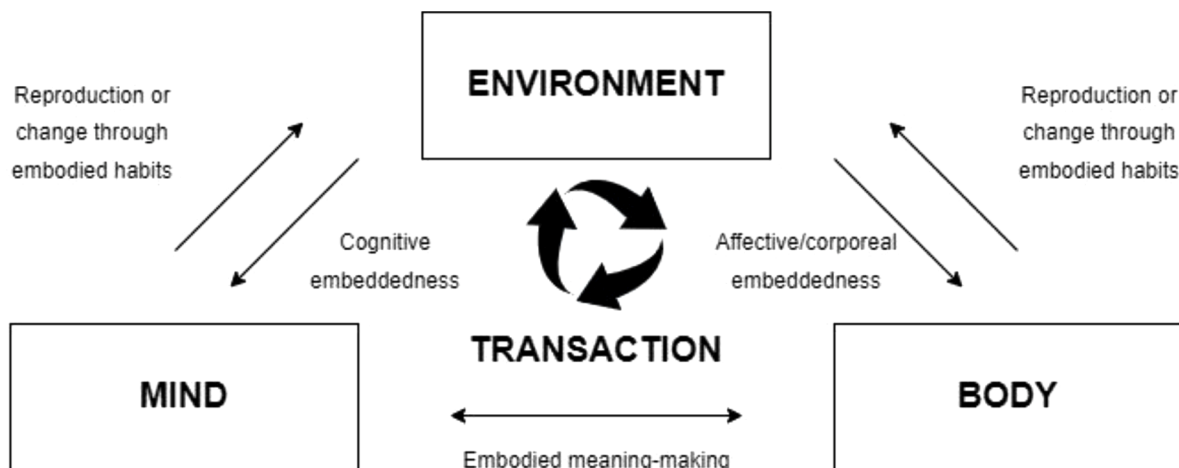

Reproduction or change through embodied habits

ENVIRONMENT

Reproduction or change through embodied habits

Cognitive embeddedness

Affective/corporeal embeddedness

TRANSACTION

MIND

BODY

Embodied meaning-making

Fig. 2. Habits as mind-body-environmental entanglements.

conceptual advancements in this regard. For example, recent conceptualizations perceive of habits as so-called *mind-body-environmental assemblages* (Bennett et al., 2013) or complex *entanglements* of cognitive (e.g. knowledge, meaning, visions), embodied (e.g. affect, physical techniques) and environmental (e.g. other people, social customs, technological infrastructures) aspects (see Fig. 2). According to Pedwell (2017), invoking change does not automatically follow from changing an individual's cognitive bias (e.g. through providing him/her with new information on why certain habits are detrimental) nor by altering one's affective experiences (by appealing to feelings of empathy or acting ethically). She refers to Dewey's (cited in Pedwell 2017: 16–18) example of telling someone with a bad posture to stand up straight. In his argument, trying to invoke a change in posture by presenting the subject with new information (e.g. a visual demonstration of how to correct their posture) will not lead to lasting change. This is the case because the subject has formed a positive, forceful habit of standing improperly. In parallel, trying to induce change by invoking emotional shock or strong feelings of empathy in actors is also rendered ineffective, as "impulse burns itself up" and "emotion cannot be kept at its full tide" (ibid.: 17). In his work on cycling cultures, Shilling (2022) for example shows how social, material, and intellectual processes are entangled in not merely learning physical techniques such as cycling, but also in the development of specific values. Investigating habits and how they are changed thus requires encapsulating all three components of mind, body, and environment.

Regarding the second question – how the process of de- and re-routinization of habits plays out in action – we need analytical approaches that allow us to empirically grasp how problematic situations can be overcome through the creative transformation of habits. Shilling (2008) shows how a crisis of habits can be a prelude to new beginnings. Being robbed of their habitual ways of acting, people are encouraged to rediscover the horizon of possibilities that exists within every situation in their search for re-establishing an effective, workable relationship with the world around them. Crises that make traditional ways of acting untenable can thus pave the way for creative responses that hold the potential to shape the environment anew. Joas' (1996) work on the creativity of action approaches the de- and re-routinization of habits in terms of non-teleological intentionality. He criticizes rational actor assumptions of actions driven by actors' motives and provides us with a different conceptualization of action with a strong focus on the 'situation'. As emphasized by Weik (2012, p. 566), "Joas is one of the few authors who really concentrate on a conceptualization of *action* as opposed to agents or practices." While the latter concepts clearly have a role to play, also in transition studies, a focus on action is a prerequisite for gaining understanding of how agency is actually exercised, how practices come about, and, ultimately, how change is made. In addition to fruitful conceptual tools, however, it is vital to employ high resolution analytical tools for the in situ study of concrete actions. In the following section, we will therefore introduce analytical concepts and questions for the study of agency in action based on the analytical method *Practical Epistemology Analysis* (Wickman and Östman 2002).

4. Studying agency-in-action: towards analytical and methodological tools

So far, Practical Epistemology Analysis has been used for the study of learning processes – first in formal educational contexts (for an overview, see Andersson and Öhman 2022) and recently also for investigating informal learning in the context of STs (e.g. Plummer and Van Poeck 2020, Van Poeck and Östman 2021). In this section, we will argue and explain how it can also be a useful starting point for empirical studies of agency in action. A *practical epistemology* can be defined as what actors – in their actions – determine to be relevant knowledge and/or relevant ways of attaining such knowledge. Östman & Öhman (2022: 6) in this regard refer to Dewey's distinction between one's *surroundings* and one's *environment.* Whereas our surrounding is defined as "the totality of objects within reach of the activity", our environment is constituted by only those elements of our surroundings that we actively engage with in our day-to-day activities. Hence, in line with our conceptualization in the previous section, what we know is always connected to how we *act* within a particular context.

Consider, once again, the commuting cyclist that gets involved in an accident. Even if the cyclist's *surroundings* remain unchanged (the amount of traffic doesn't suddenly change, the infrastructure remains the same, etc.), the *environment* can potentially change drastically as the cyclist feels disturbed in the habit of cycling to work and becomes attentive to other aspects of the surrounding conditions. What was once a safe environment for getting from point A to B might become something that the cyclist perceives as dangerous. The cyclist might start to connect the surroundings to knowledge related to the vulnerability of cyclists in traffic, to the chance of being involved in an accident once more, to the impact of motorized traffic on public space etc. Hence, the *perception* of the surroundings change due to the event, which leads to new forms of knowledge being highlighted, new associations with these surroundings, and possibly new routes of action (e.g. commuting by car or becoming more activist in terms of cyclist safety).

PEA is designed to make visible this process of 'activating' certain background phenomena to interpret the situation at hand. It allows for a "high resolution analysis" of how meaningful relations are built in encounters between persons and their (social and physical) environment (Wickman and Östman 2002). This process of including some aspects in ongoing meaning-making while excluding others has been conceptualized by Wertsch (1998) as 'privileging'. PEA provides an analytical method to carefully determine how this process of privileging takes shape. First of all, our habitual way of thinking and doing is reflected in what *stands fast*, which is defined by Lidar et al. (2006) as "our point of departure for interactions with the world". Drawing from our exploration of habits, what stands fast can be related to routinized understandings of our surroundings and ways of emotional engagement, as well as uncontested or commonsensical forms of thinking and/or acting. Furthermore, what stands fast can both be attributed to individual habits, but can also be perceived as forms of shared understanding or common practices that emerge among collectives of actors (Plummer and Van Poeck 2020).

Second, what stands fast is continuously in transaction with what we *encounter* in the world. Put simply, at some points in our experience of the world, what we know or habitually do is confronted with new situations in such a way that we cannot proceed habitually with our ongoing activities. In such cases, *gaps* becomes visible in which "there is a lack of prior experience and understanding to guide action in response to the problematic situation" (ibid.: 424). Such gaps can take many forms and manifest themselves

in practical, intellectual, and/or emotional disturbances of our individual habits. The cyclist in our example above encounters both an emotional (i.e. suddenly feeling unsafe when cycling) and practical (not being able to commute by bike) disturbance which need resolving. In collective settings, such disturbances can become visible in the form of hesitations, disagreements, and (recurring) questions.

Gaps can be bridged through a simple adjustment or enrichment of existing habits. However, when such gaps prove persistent and linger – either in individual or collective disturbances – actors are forced to engage creatively in establishing *new relations* in order to re-establish a functional coordination of their ways of thinking, acting and/or feeling with the new situation at hand. These relations are built by connecting intrapersonal aspects (e.g. previous knowledge, beliefs, values and/or emotions that become re-actualized in the new situation) and (interpersonal, institutional and/or physical) aspects of the environment (see Fig. 1). By making such analytical distinctions and carefully observing their interplay, PEA makes it possible to identify gaps in what stands fast, encounters, and new relations and, thus, to gain a detailed insight into how new forms of meaning, new types of practices, and/or new emotional responses can be developed in action. The method allows us to stay close to empirical observations and distill findings that can be interpreted in terms of what privileging takes place and how this process unfolds. Detailed analyses of observed activities and conversations in terms of what is included and excluded in the ongoing privileging, as well as through which encounters and interventions, make it possible to gain empirically grounded insight in how actors and their environments, simultaneously and reciprocally, change in some aspects while remaining stable in others. Thus, we can gain insight into how actors reconsider their perception of their environment, develop new habits in relation to that environment, and – ultimately – also change the socio-technical environment itself. Indeed, the privileging process can shed light on how the *directionality* of certain sustainability initiatives takes shape. Through privileging, new elements (once again: be it intellectual, practical and/or emotional) can be introduced in collective sense-making and can cause what we would call a *creative shift* (cf. Table 1). In addition, certain ways of interpretating, dealing or engaging with the situation at hand that were previously unknown, marginalized, or excluded might become plausible in transaction. Privileging can however also cause newly introduced elements to be dismissed or excluded from the sense-making process, thereby restoring or conserving the original direction of sense-making.

In sum, this approach offers us a set of analytical concepts and questions to investigate the disturbance of habits and the process of de- and re-routinization in action and in a transactional sense - i.e. in which actors and their context are in constant functional coordination. Once again, this process can both be observed in individual cases and – more importantly we would argue – in cases of emerging collective practices like local sustainability experiments, technology development or formal decision-making processes. For a schematic overview of the privileging process, please consult Fig. 3.

5. Discussion and conclusion

The aim of this article was to further our understanding of agency in the context of STs. In particular, we presented a transactional approach to analyzing agency in action which, we hope, can inspire further research on how socio-technical change is made through concrete actions (Pesch 2015). By bringing insights from transactional pragmatism to the debate, we have introduced a conceptional framework and analytical approach that allows us to open-up the black box of the structure-agency interplay by in situ investigating how actors *act* within concrete sustainability actions, how they make sense of the structural conditions within the environment in

Table 1
Analytical concepts and questions for the study of agency in action.

| PEA concept	Definition	Analytical questions for revealing privileging processes
What stands fast	Our routinized, habitual, uncontested forms of thinking, feeling, and acting in the world	- How is what stands fast linked to intrapersonal and/or environmental (i.e. interpersonal, institutional, physical) aspects? - Is what stands fast situated on the individual (i.e. individual habits) or collective (shared practices, forms of understanding, emotional engagement) level? - What is the nature of what stands fast? (i.e. practical, intellectual and/or emotional)? - What, if anything, becomes something that collectively stands fast through inclusion in the ongoing privileging?
Gaps resulting from new encounters	Situations where what *stands fast* is unable (or insufficiently able) to deal with the situation at hand	- Which encounter(s) cause(s) the gap? - Which intrapersonal and environmental (i.e. interpersonal, institutional, physical) aspects interplay in these encounter(s)? - What is the nature of the gap (i.e. practical, intellectual and/or emotional)? - How does the gap disrupt the ongoing privileging process?
New relations	Creative ways of bridging gaps by connecting the new situation at hand to something that stands fast	- Which relations of intrapersonal and environmental (i.e. interpersonal, institutional, physical) aspects are created? - Which encounters made it possible to create these relations? - What is the nature of the new relations? (i.e. practical, intellectual and/or emotional)? - How do the new relations affect the ongoing privileging process? (i.e. what is included or excluded)? - What do the new relations imply in terms of the directionality of the sense-making process – i.e. do we observe creative shifts and/or restoration or conservation of the initial direction of sense-making?
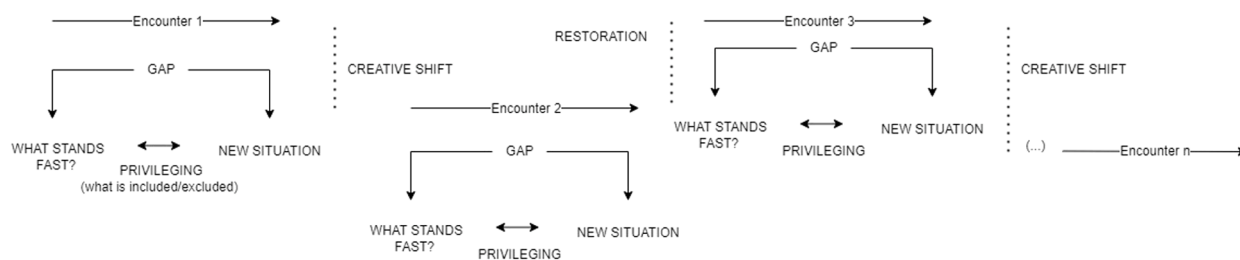
Fig. 3. A schematic overview of a privileging process.

which they are situated, and how they come to new forms of meaning, practices, and/or emotional engagements in response to any new encounters that they might experience. This allows to reveal actors' ability to take action, to choose what action to take, and to make a difference (i.e. how they exercise agency) in transaction with recurrent, structural arrangements in their environment which influence the available opportunities.

We have limited ourselves in this article to laying out the conceptual and analytical groundwork for future research on the topic. Its empirical application will be vital in view of a critical evaluation and adjustments or additions to the here presented groundwork. In addition, we would argue that the explicit micro-focus of our conceptual and analytical approach is both a strength as well as a weakness. A no doubt important missing piece of the puzzle will be in further bridging the gap between processes of transactional sense-making in the here and now to long-term transitions and social change. We see great potential in using our framework as a conceptual and analytical lens to engage with existing work on for example transition experiments (e.g. Luederitz et al., 2017) and strategic niche management (e.g. Schot and Geels 2008), which both provide important insights on how bottom-up sense-making in niche-context can ultimately become "building blocks for broader societal changes towards sustainable development" (ibid.: 537). In addition, recent – albeit more conceptually oriented – work by for example Kok et al. (2021) that explicitly targets this gap can also help in further teasing out the mechanisms of influence between micro-transactions and macro-level change.

Third, two things that we did not explicitly address throughout our conceptual and analytical exploration, but that are nevertheless clearly implied, are politics and power. Conceptually, the double law of habits is for one indebted to Foucauldian notions of 'productive power' and 'governmentality', as habits encapsulate 'normalized' forms of thought, practice or affect and can therefore be perceived as vectors for what Foucauldian scholars commonly refer to as 'the conduct of conduct' (e.g. Bröckling et al., 2010). Analytically, the privileging process and the dynamics of creative shifts and restorations are also reminiscent of dynamics of (de)politicization, in the sense that both point at the "contingent nature of the social" and the idea that "every […] construction entails certain exclusions" which "inevitably entails acts of power" (Kenis 2019: 834, brackets added). Hence, a promising pathway for future research is to explore the potential of transactional pragmatism for enriching the existing literature on power and politics in transitions and to further substantiate how transactionalism can increase our conceptual and empirical knowledge of transitions in this regard as well.

Fourth and finally, we also hope that our work can serve as a gateway for further exploring the role of emotions and the affectual dimension of transitions. We thus endorse a recent and similar plea by Martiskainen & Sovacool (2021), who also argue that the study of transitions and people's capacity to bring about and embody change in this regard should include emotional dimensions of agency as well. The concept of mind-body-environmental entanglements already suggests that emotions do play a role, and that they are a fundamental element in our ability to make sense of our environment and our capacity to creatively induce change. Yet, more conceptual and empirical explorations are needed to pinpoint how they play a role in the dynamics of continuity and change.

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The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

No data was used for the research described in the article.

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